Appl. No. 09/844,730
Amdt. dated January 21, 2005
Reply to Office action of October 20, 2004

REMARKS

I.   CLAIM STATUS

Claims 1-20 were pending. Claims 7 and 12-14 have been canceled.
Claims 1, 3-4, 11, and 17-18 have been amended. Claims 21-22 have been
added. Claims 1-6, 8-11, and 15-22 are therefore pending.

II.   REJECTIONS UNDER 35 USC § 112

Claims 1-10 and 18 stand rejected under 35 USC § 112 as being indefinite
for various deficiencies. Applicants have amended the claims to address these
rejections. Specifically, claim 1 has been amended to incorporate the integrator
into the body of the claim. Claims 3, 4, 10 and 18 have been amended to correct
antecedent basis errors. Applicants respectfully submit that the amendments
overcome these rejections.

III.   REJECTIONS UNDER 35 USC § 103

Claims 1-7, 9, 10-12 and 14-20 stand rejected under 35 U.S.C. § 103(a)
as being unpatentable over U.S. Pat. No. 6,269,376 ("Dhillon") in view of U.S.
Pat. No. 6,263,337 ("Fayyad"). Claims 8 and 13 stand rejected under 35 U.S.C.
§ 103(a) as being unpatentable over Dhillon in view of Fayyad and further in view
of U.S. Pat. No. 6,584,433 ("Zhang"). Claims 7 and 12-14 have been canceled.
Applicants traverse the remaining rejections insofar as they may apply to the
pending claims.

As amended, independent claim 1 recites that "the local sufficient statistics
and the global parameter values support implementation of a distributed K-
Harmonic Means clustering algorithm or a distributed Expectation-Maximization
clustering algorithm." The examiner cites Zhang as teaching a K-Harmonic
Means clustering algorithm and Fayyad as teaching an Expectation-Maximization
clustering algorithm. However, neither of these references teaches or suggests
that these algorithms can be implemented in the distributed fashion recited in the
claim. Zhang teaches processing of the whole data set to recursively determine
the cluster centers. See Zhang, top of col. 6 (teaching ratios of complex
summations over whole data set).

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Fayyad teaches processing a database in portions, but the calculations on each portion are dependent on the calculated results for the previous portion. *See* Fayyad, col. 12, ll. 46-54 ("... after each of the single points has been updated, a branch 220 is taken to [update] the New_Model data structure for all the subclusters in [the compressed data set]."), and col. 13, ll. 12-21 ("...a branch 240 is taken to update the New_Model using the contents of the [discarded] data structure").

Thus, neither Zhang nor Fayyad recognizes that their respective clustering algorithms are amenable to a parallel implementation, as provided in claim 1. For at least this reason, applicants respectfully submit that independent claim 1, along with its dependent claims 2-6 and 8-10 are allowable over the cited art.

Independent claim 11 recites that the global parameter values operated on by the various computing units include "centers, co-variance matrices, and mixing probabilities in accordance with an Expectation-Maximization (EM) clustering algorithm." Again, the examiner cited Fayyad's teaching of an Expectation-Maximization clustering algorithm, but the cited art fails to teach here or elsewhere that the EM clustering algorithm is amenable to a parallel implementation as recited by claim 11. For at least this reason, applicants respectfully submit that independent claim 11 and its dependent claims 15-20 are allowable over the cited art.

Newly added independent claim 21 recites in part "a plurality of computing units configured to ... obtain local sufficient statistics for updating the set of centers in accordance with the K Harmonic Means clustering algorithm." The examiner cited Zhang as teaching a K-Harmonic Means clustering algorithm, but the cited art fails to teach here or elsewhere that the K Harmonic Means clustering algorithm is amenable to a parallel implementation as provided in the claim. For at least this reason, applicants maintain that independent claim 21 and its dependent claim 22 are allowable over the cited art.

IV.   **CONCLUSION**

In the course of the foregoing discussions, applicants may have at times referred to claim limitations in shorthand fashion, or may have focused on a

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particular claim element. This discussion should not be interpreted to mean that the other limitations can be ignored or dismissed. The claims must be viewed as a whole, and each limitation of the claims must be considered when determining the patentability of the claims. Moreover, it should be understood that there may be other distinctions between the claims and the cited art which have yet to be raised, but which may be raised in the future.

Applicants respectfully request reconsideration and that a timely Notice of Allowance be issued in this case. It is believed that no extensions of time or fees are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 C.F.R. § 1.136(a), and any fees required (including fees for net addition of claims) are hereby authorized to be charged to Hewlett-Packard Development Company's Deposit Account No. 08-2025.

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